REMARKS/ARGUMENTS

Favorable reconsideration of this application in light of the following discussion is respectfully requested.

Claims 1 and 3-6 are now active in this application. Claims 7 and 8 have been withdrawn, and claim 2 has been canceled. Claim 5 is herein amended. No new matter is added.

In the outstanding Office Action, Claims 1, 3, and 4 were rejected under 35 U.S.C. §103(a) as obvious over Ito, EP1146569, in view of De Francesco, U.S. Patent No. 5,733,511. Claim 5 was rejected under 35 U.S.C. §103(a) as obvious over Ito and De Francesco in view of Pote, U.S. Patent No. 5,239,134. Claim 6 was rejected under 35 U.S.C. §112, second paragraph. Claim 6 was objected to for informalities.

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Claim 1, from which claims 3-6 depend, is directed to a method for plasma-enhanced chemical vapor deposition. A discharge electrode and a substrate are disposed opposite to each other in a vacuum film formation chamber into which a gas for forming a film containing a substance has been introduced. High-frequency electric power generated by a high-frequency electric power feeding circuit is fed to a plurality of feeding points provided to the discharge electrode through a plurality of external cables which are disposed outside the vacuum film formation chamber and then through a plurality of internal cables which are disposed inside the vacuum film formation chamber and which correspond with the external

cables, respectively, so as to generate plasma between the discharge electrode and the substrate to vapor deposit the substance on the substrate. The method includes adjusting phases of the high-frequency electric power at the feeding points by changing electrical characteristics of the external cables, the high-frequency electric power being fed to the plurality of feeding points. High-frequency electric power is fed to the plurality of feeding points. The phases of the high-frequency electric power at the feeding points are adjusted by (1) carrying out vapor deposition with change in electrical characteristics of the external cables, (2) carrying out observations of the condition of the substance which has been vapor deposited on the substrate, and (3) changing the electrical characteristics of the external cables on the basis of the observations.

The Office asserts in the outstanding Office Action that Ito teaches a method of plasma-enhanced chemical vapor deposition in which a discharge electrode and a substrate are parallel to each other in a vacuum chamber with a deposition gas for forming a film. The Office further asserts that Ito teaches that high frequency electric power generated by a feeding circuit is fed to feeding points to the discharge electrode through external cables and internal cables corresponding with the external cables to generate plasma. The Office further asserts that Ito teaches that the phases of the high frequency electric power at the feeding points is changed by changing the characteristics of the external cables with the power being fed to the feeding points.

In order to form a thin film with uniform thickness using plasma-enhanced chemical vapor deposition, Ito discloses that plasma is generated so as to have the desired density distribution by amplitude-modulating the high frequency power to be fed to the electrode and by adjusting the modulation conditions such as percentage of amplitude modulation, modulation frequency, and duty ratio. See paragraphs [0021], [0054] and [0073] of Ito. Clearly, Ito does not teach the instantly claimed method, at least because it doesn't disclose a

method in which the electrical characteristics of the external cables are changed on the basis of the observations of the condition of the substance which has been vapor deposited on the substrate.

The Office, however, asserts that De Francesco teaches modifying electrical characteristics of similar external coaxial cables based on plasma conditions in order to make more uniform plasma. Combined with Ito, the Office concludes that it would have been obvious to one of ordinary skill in the art at the time of the invention to include modifying electrical characteristics of the external coaxial cables based on plasma conditions in order to make more uniform plasma.

Applicants respectfully disagree. While De Francesco teaches a technique that purportedly results in greater uniformity of the plasma layer, it clearly fails to teach anything about a method in which the electrical characteristics of the external cables are changed on the basis of the observations of the condition of the substance which has been vapor deposited on the substrate. The presently claimed method for plasma-enhanced vapor deposition, phases of the high-frequency electric power at the feeding points are adjusted by changing electrical characteristics of the external cables on the basis of the observations of the condition of the substance (for example, film quality and thickness) which has been deposited on the substrate. The condition of the substance deposited on the substrate is affected not only by the condition of the plasma, but also by other factors such as the temperature distribution of the substrate, the concentration of gas, and the flow of gas. In addition, a deposition chamber for forming a thin film is generally made of metal. It is quite difficult to accurately analyze the condition of plasma over the entire substrate since the condition of plasma inside the chamber cannot be easily observed. Therefore, the method according to the present application in which the results directly obtained from the film deposited on the substrate are reflected in the subsequent film formation, provides more

precise adjustment of the high-frequency power, and results in a more uniform deposition. The method of Ito does not teach adjusting the electrical characteristics based on observation of the condition of the substance deposited on the substrate. Nor does De Francesco. Nor does Pote.

A claimed invention can only be found obvious if there is "some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007) (*quoting In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006). Moreover, every word in a claim must be considered in determining the question of patentability against the prior art. *In re Wilson*, 424 F.2d 1382, 1385 (CCPA 1970). The cited references do not together teach all of the elements of claim 1, and the Office has not offered any rational reason why one skilled in the art would combine the recited references to reach the claimed invention. Accordingly, the combination of Ito with De Francesco and/or Pote cannot render claim 1, or any of the claims depending therefrom, obvious. Applicants respectfully request withdrawal of these rejection.

Claim 6 was rejected under 35 U.S.C. §112, second paragraph. Claim 6 was objected to for informalities. Claim 6 is herein amended. Support for the amendment is found at least in the original claims as filed. No new matter is added. Applicants believe the rejection and objection regarding claim 6 are obviated by this amendment.

In light of the above discussion, the present application is believed to be in condition for allowance. An early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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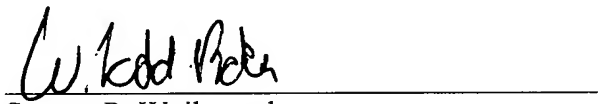

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